U. S. FOREST SERVICE

RESEARCH NOTE NC-121

NORTH CENTRAL FOREST EXPERIMENT STATION, FOREST SERVICE—U.S. DEPARTMENT OF AGRICULTURE

Folwell Avenue, St. Paul, Minnesota 55101

THINNING POLE-SIZED ASPEN HAS NO EFFECT ON NUMBER OF VENEER TREES OR TOTAL YIELD

ABSTRACT. — Thinning 37-year-old aspen in north central Minnesota did not increase either total volume production or the number of veneer-sized trees after 10 years. Thinning is not recommended for stands nearing rotation age.

OXFORD: 242:562.2:176.1 *Populus tremuloides* **(776). KEY WORDS: stand diameter, cordwood volume.**

It has been shown for many species that thinning will increase the total merchantable yield from a stand by utilizing possible future mortality and by increasing diameter growth of residual trees. To test this in a 37-year-old stand of trembling aspen (*Populus tremuloides* Michx.) a cooperative study of thinning was made by Diamond International Corporation and the North Central Forest Experiment Station. Specific objectives were to increase diameter growth of selected trees to give maximum production of veneer logs, and to increase total yield by salvaging high-risk trees that would otherwise die before the final harvest cut.

METHODS

The 40-acre study area is located in north central Minnesota. Before thinning, average stocking was 468 trees, 113 square feet of basal area, and 27.5 cords per acre. The aspen site index of 85 is well above average for the area.

Thinning was from below, removing suppressed, intermediate, and some codominate trees, and leaving mostly sound, potential crop trees. The cutting removed an average of 10.4 cords per acre, leaving 222 trees and 58 square feet of basal area per acre. To measure treatment effects, four 1/10-acre plots were located in the thinned area and two plots were located in an unthinned area.

RESULTS

At age 47, 10 years after thinning, the average stand diameters were 8.9 inches for the thinned plots and 7.9 inches for the unthinned plots. Mortality in the thinned area was equally distributed among all remaining diameter classes, while in the unthinned area it was mainly in the smaller diameter classes.

To determine the effect of thinning on size of crop trees in the two areas, the average diameters of the 50, 100, and 150 largest trees were compared. The average diameters of these larger trees on the two treatments were similar:

	Thinned Plots	*Unthinned Plots*
Largest 50 trees per acre	10.5	10.4
Largest 100 trees per acre	9.9	9.8
Largest 150 trees per acre	9.4	9.3

One of the main objectives of the study was to determine if the number of larger trees suitable for veneer (8.6 inches d.b.h. and larger) could be increased. After 10 years the thinned area contained 118 and the unthinned 120 such trees per acre. Thus, thinning reduced the number of smaller trees but did not increase the number of veneer trees.

Thinning did not increase the total marketable volume in 10 years. The respective volumes at age 47 for the thinned and unthinned acres were 24.9 and 35.0 cords per acre. Including the 10.4 cords that were removed in thinning, the two stands produced marketable volumes of 35.3 and 35.0 cords per acre in 47 years. Total cordwood volume production per acre was:

	Thinned	*Unthinned*
Residual volume, age 37	14.9	27.5
Growth, age 37-47	12.0	15.7
Mortality	—2.0	—8.2
Standing volume, age 47	24.9	35.0
Thinned volume	10.4	
Total production	35.3	35.0

CONCLUSIONS

This study indicated that aspen did not respond to thinning at later ages in the rotation. However, aspen is extremely variable genetically so care must be used when applying these interpretations to other stands. But other thinning studies in older stands underway at the Station have shown similar results. In older stands dominance has been expressed for several years, and thinning from below has little effect on the remaining trees.

Although total yield or size of crop trees were not increased by thinning, an earlier income was realized and the stand was "opened up" by the access roads. One of these benefits or possibly others may justify thinning to meet the forest manager's objective.

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